



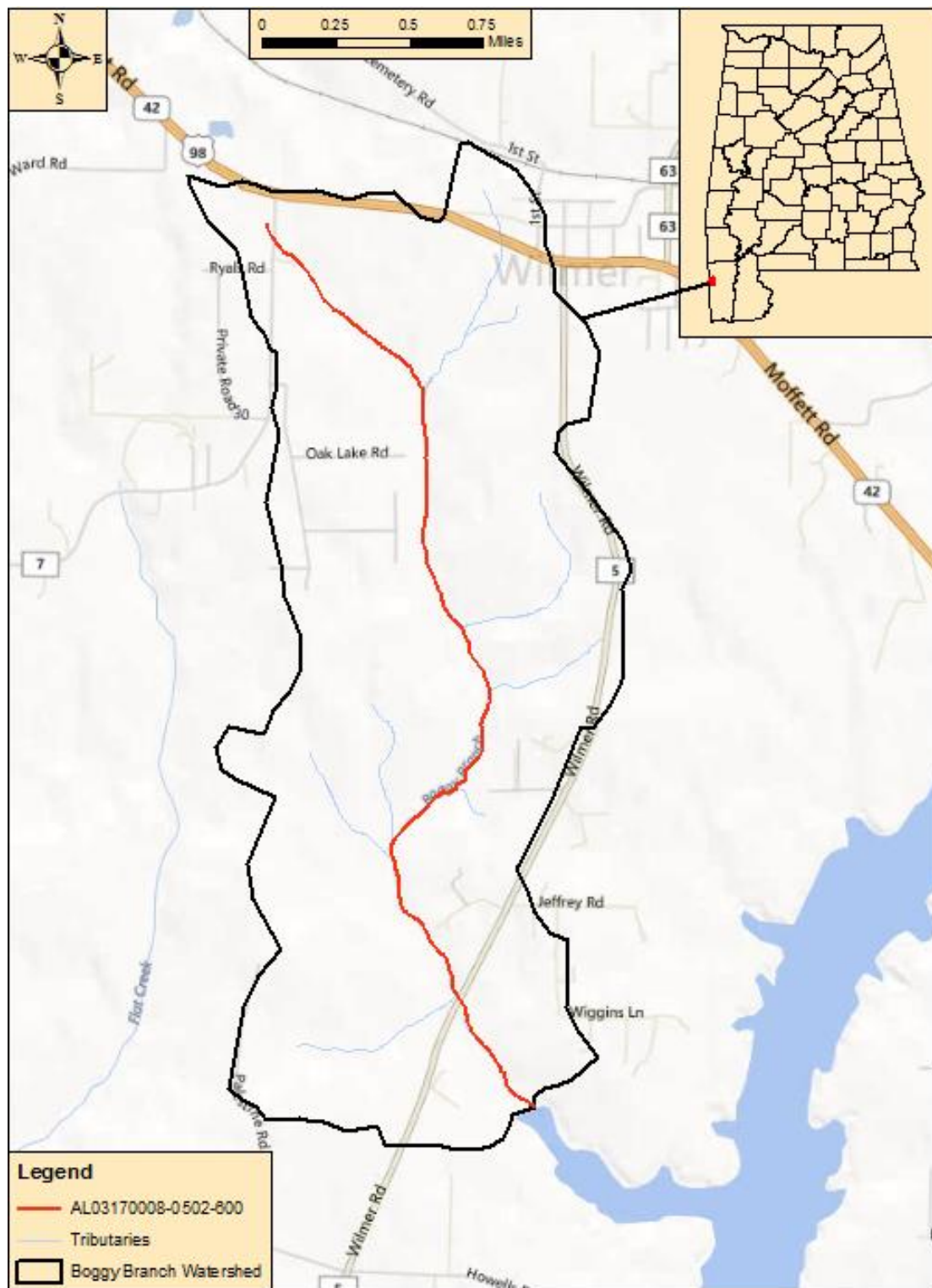
Draft
Delisting Decision
For
Boggy Branch

Assessment Unit ID # AL03170008-0502-600

Metals (Iron)

Alabama Department of Environmental Management
Water Quality Branch
Water Division
February 2014

Figure 1-1 Boggy Branch Watershed



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1.0 Executive Summary

Boggy Branch is located in Mobile County approximately 10 miles northwest of the city of Mobile in the Escatawpa River Basin. The total length of Boggy Branch is 3.62 miles, and it has a total drainage area of 3.43 square miles. Its headwaters start in Mobile County near Wilmer and flow into the Big Creek Reservoir. Boggy Branch has a use classification of Fish & Wildlife (F&W). The entire Boggy Branch watershed is located in the level IV eco-region, 65f.

Boggy Branch was added to the State of Alabama's 1998 §303(d) list of impaired streams in 1999 for Metals (Fe) and pathogens by the United States Environmental Protection Agency (USEPA). The listing was based on data collected by the United States Geological Survey in 1994 (USEPA, 1999). The reference document for the USEPA's decision to include Boggy Branch on Alabama's 1998 §303(d) list is shown in Appendix 7.4. The impaired segment extends from the Big Creek Reservoir to its source. The source of the impairment is currently listed as Natural and Wet Weather Discharge. Boggy Branch was subsequently listed on Alabama's §303(d) list of impaired streams for iron from 2000-2012.

In 2000, ADEM addressed the pathogens impairment by removing it from the 2000 §303(d) list. The justification for the removal was that, of the 23 measurements made by USGS between 1996 and 1999, 2 (8.7%) exceeded the 2000 colonies/100 mL criterion.

In 2007 and 2011, ADEM collected data on Boggy Branch at station BGYM-1 and in the Big Creek Reservoir at the confluence of Boggy Branch at station BCLM-14. These samples were collected in an effort to more fully evaluate existing conditions as related to the previous metals (Fe) listing decision. The data collected was compared to the USEPA's recommended water quality criterion of 1.0 mg/L for dissolved iron. None of the samples collected were above this criteria. The data collected was also compared to Alabama's 2010 Eco-regional Reference Guidelines for iron. The comparison indicates that the iron concentration in the impaired segment is at or well below background levels. Therefore, ADEM will not develop a TMDL for this waterbody due to "more recent or accurate data" indicating non-impairment which is considered to be just cause for delisting a waterbody pursuant to Title 40 of the Code of Federal Regulations (CFR), Part 130.7(b)(6)(iv).

2.0 Basis for §303(d) Listing

Section 303(d) of the Clean Water Act (CWA), as amended by the Water Quality Act of 1987 and EPA's Water Quality Planning and Management Regulations [(Title 40 of the Code of Federal Regulations (CFR), Part 130)] require states to identify waterbodies which are not meeting water quality criteria applicable to their designated use classifications. The identified waters are prioritized based on severity of pollution with respect to designated use classifications. Total maximum daily loads (TMDLs) for all pollutants causing violation of applicable water quality criteria are established for each identified water. Such loads are established at levels necessary to implement the applicable water quality criteria with seasonal variations and margins of safety. The TMDL process establishes the allowable loading of pollutants, or other quantifiable parameters for a waterbody, based on the relationship between

pollution sources and in-stream water quality conditions, so that states can establish water-quality based controls to reduce pollution from both point and non-point sources and restore and maintain the quality of their water resources (USEPA, 1991).

Iron is considered to be a non-priority pollutant. The State of Alabama currently has no water quality criteria for iron. There are two EPA-recommended criteria for iron: a freshwater chronic aquatic life toxicity value of 1.0 mg/L and domestic water supply value of 0.3 mg/L (USEPA, 1986). Toxicity is based on the dissolved, biologically available fraction.

As mentioned in the Executive Summary, the USGS data placing Boggy Branch on the 1998 §303(d) list was dissolved iron collected from February 3, 1994 – August 3, 1994. Of the 3 samples collected, 1 exceeded the 1.0 mg/L criterion (USEPA, 1999). This listing data can be found in Appendix 7.3.

3.0 Technical Basis for Delisting Decision

3.1 Water Quality Target Identification

The State of Alabama currently has no water quality criteria for iron. The USEPA has two recommended water quality criteria for iron. The USEPA recommends a freshwater chronic aquatic life toxicity value of 1.0 mg/L and a domestic water supply criterion of 0.3 mg/L. Toxicity is based on dissolved, biologically available fraction. It should be noted, iron can exist in natural organometallic or humic compounds and colloidal forms. Black or brown swamp waters may contain iron concentrations of several mg/L in the presence or absence of dissolved oxygen, but this iron form has little effect on aquatic life because it is complexed or relatively inactive chemically or physiologically (USEPA, 1986).

3.2 Source Assessment

3.2.1 Point Sources in the Boggy Branch Watershed

Continuous Point Sources

Currently there are no active NPDES Permits within the Boggy Branch watershed.

Non-Continuous Point Sources

Boggy Branch does not currently have any non-continuous point sources within the watershed. There are no CAFOs located in the Boggy Branch watershed and currently none of the watershed qualifies as a Municipal Separate Stormwater Sewer System (MS4) area.

3.2.2 Nonpoint Sources in the Boggy Branch Watershed

From review of the data collected and land source assessment, it is believed that nonpoint sources are not causing or contributing to any iron issues in Boggy Branch.

3.3 Land Use Assessment

Land use for the Boggy Branch watershed was determined using ArcMap with land use datasets derived from the 2006 National Land Cover Dataset (NLCD). Figure 3-1 and Table 3-1 display the land use areas for the Boggy Branch watershed. Figure 3-2 is a graph depicting the primary land uses in the Boggy Branch watershed.

The majority of the Boggy Branch watershed is 83% forested/natural. Other major land uses within the watershed account for approximately 11% agriculture land and 6% developed land. Developed land includes both commercial and residential land uses.

Figure 3-1. Land Use Map for the Boggy Branch Watershed

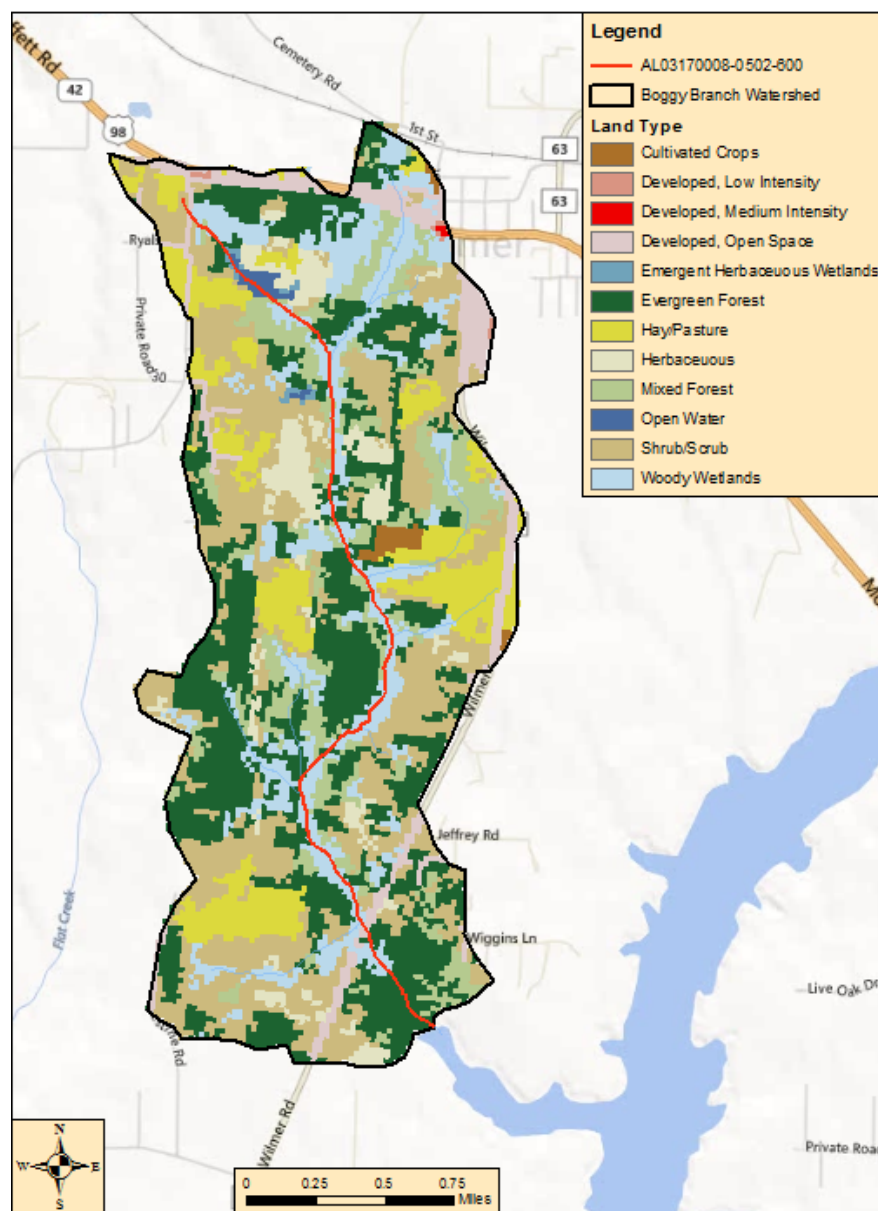
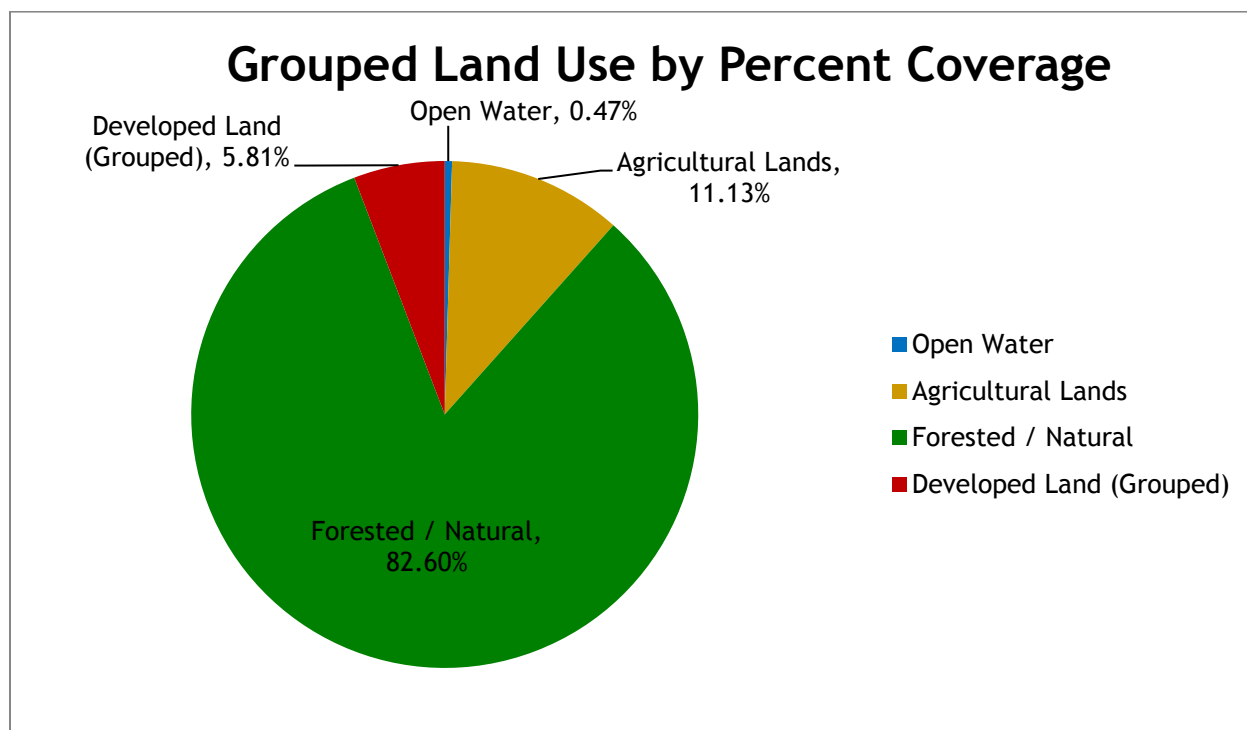


Table 3-1. Land Use Areas for the Boggy Branch Watershed

Class Description	Mi ²	Acres	Percent
Open Water	0.02	10.23	0.47%
Developed, Open Space	0.19	123.65	5.63%
Developed, Low Intensity	0.00	3.11	0.14%
Developed, Medium Intensity	0.00	0.89	0.04%
Evergreen Forest	0.94	604.47	27.52%
Mixed Forest	0.34	218.61	9.95%
Shrub/Scrub	0.91	584.90	26.62%
Herbaceous	0.17	110.53	5.03%
Hay/Pasture	0.36	230.18	10.48%
Cultivated Crops	0.02	14.23	0.65%
Woody Wetlands	0.45	290.23	13.21%
Emergent Herbaceous Wetlands	0.01	5.78	0.26%
TOTALS →	3.43	2196.82	100.00%
Class Description	Mi ²	Acres	Percent
Open Water	0.02	10.23	0.47%
Agricultural Lands	0.38	244.41	11.13%
Forested / Natural	2.84	1814.52	82.60%
Developed Land (Grouped)	0.20	127.65	5.81%
TOTALS →	3.43	2196.82	100.00%

Figure 3-2. Graph of the Primary Land Uses in the Boggy Branch Watershed



4.0 Data Availability and Analysis

4.1 Data Summary

All of the original listing data was collected by the United States Geological Survey. The data was collected from USGS Station 02479960, Boggy Branch at County Road near Wilmer, AL. The coordinates for the station are: Latitude 30°47'13" and Longitude -88°22'01". The listing data collected from this station can be found in Appendix 7.3, Table 7-4.

In 2007 and 2011, ADEM collected metals data on Boggy Branch at station BGYM-1 and in the Big Creek Reservoir at the confluence with Boggy Branch at station BCLM-14. These samples were collected to more fully evaluate existing conditions as related to the previous iron listing decision. This data did not indicate that Boggy Branch was impaired for iron. Dissolved iron concentrations were below the USEPA recommended criteria of 1.0 mg/L. Also, the median value of the dissolved iron samples was below the eco-reference levels. Total iron was also evaluated. Since there is no criterion for total iron, the median value of the total iron samples was compared to the eco-reference level. The median value of the total iron samples was relatively the same as the eco-reference level further indicating that there is no iron impairment. It should be noted that iron can exist in natural organometallic or humic compounds and colloidal forms. Black or brown swamp waters, such as Boggy Branch, may contain iron concentrations of several mg/L in the presence or absence of dissolved oxygen, but this form has little effect on aquatic life.

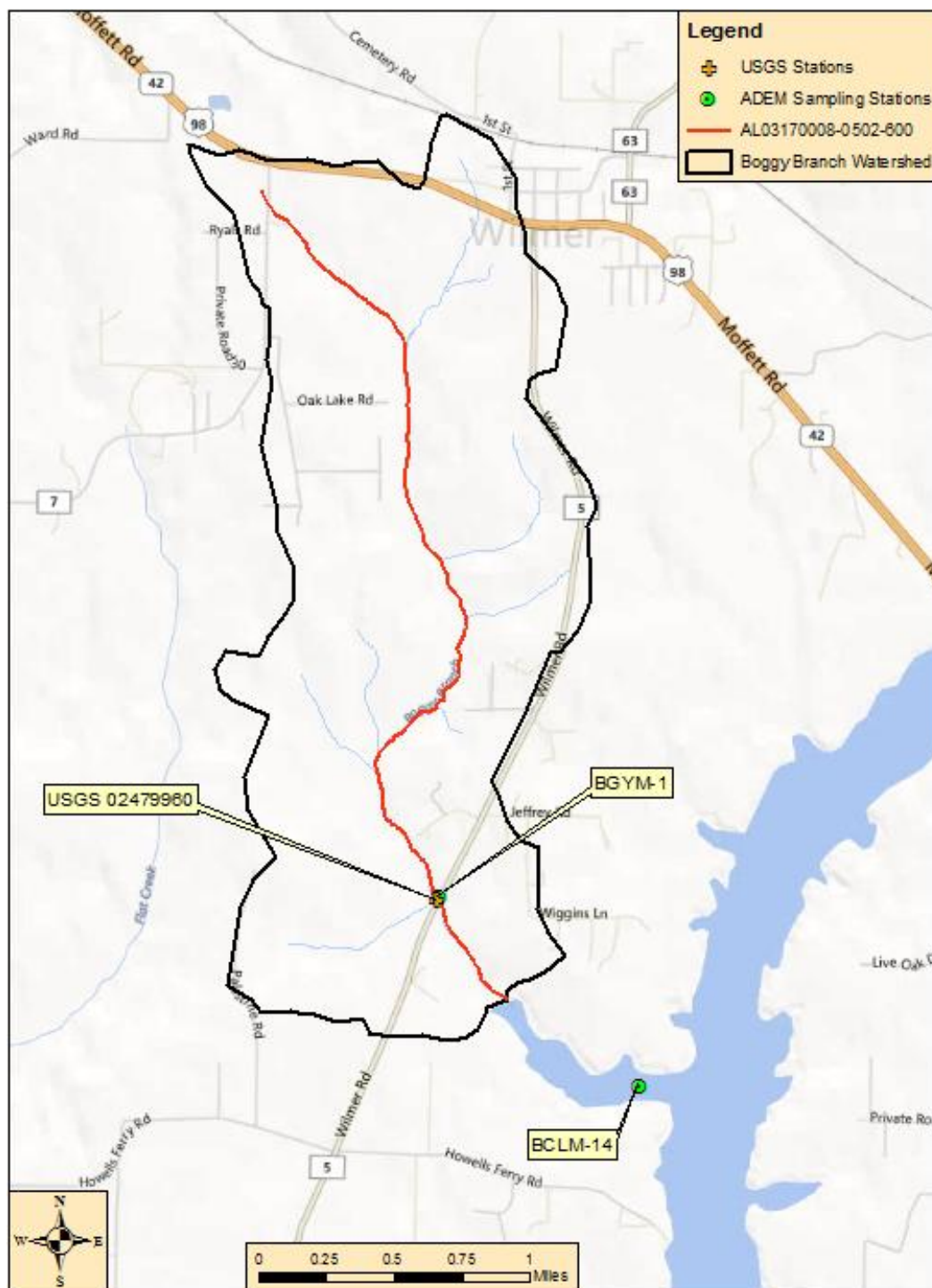
Table 4-1. Location Description of USGS Sampling Station

Station ID	Stream	Station Description	Latitude	Longitude	County
02479960	Boggy Branch	Boggy Branch at County Road Near Wilmer, AL.	30.78694°	-88.36694°	Mobile

Table 4-2. Location Descriptions of ADEM Sampling Stations

Station ID	Stream	Station Description	Latitude	Longitude	County	Ecoregion/ Subregion
BGYM-1	Boggy Branch	Boggy Branch at Mobile Co. Rd. 5 south of Wilmer	30.78730°	-88.36670°	Mobile	65f
BCLM-14	Big Creek Reservoir	Big Creek Lake at Boggy Branch Confluence	30.77724°	-88.34506°	Mobile	65f

Figure 4-1. Map of Sampling Locations for Boggy Branch



4.2 Dissolved Iron

In 2007 and 2011, ADEM collected a total of 22 dissolved iron samples from two different stations, BGYM-1 and BCLM-14. None of the samples were above the EPA recommended criteria of 1.0 mg/L. These samples are shown below in Table 4-3. The median values of those samples were also compared to the eco-reference value. The median values for the dissolved iron samples were well below the eco-reference value. Table 4-4 shows the comparison of the median value of the samples to the eco-reference values.

Table 4-3. Dissolved Iron Samples from Boggy Branch

Station ID	Visit Date	Fe Dissolved (mg/L)	Fe Dissolved Detect Condition
BCLM-14	3/23/2011	0.036	< MDL .36,
BCLM-14	4/13/2011	0.036	< MDL .36,
BCLM-14	5/12/2011	0.202	
BCLM-14	6/21/2011	0.036	< MDL .36,
BCLM-14	7/19/2011	0.092	JQ2
BCLM-14	10/26/2011	0.167	JI
BGYM-1	3/21/2007	0.32	
BGYM-1	4/24/2007	0.4	
BGYM-1	5/24/2007	0.43	
BGYM-1	6/12/2007	0.48	
BGYM-1	7/24/2007	0.349	
BGYM-1	8/7/2007	0.34	
BGYM-1	9/25/2007	0.36	
BGYM-1	10/25/2007	0.34	
BGYM-1	3/15/2011	0.29	
BGYM-1	4/7/2011	0.036	< MDL .036,
BGYM-1	5/3/2011	0.475	
BGYM-1	6/9/2011	0.156	JI
BGYM-1	7/21/2011	0.318	JQ2
BGYM-1	8/8/2011	0.181	JQ1
BGYM-1	9/27/2011	0.351	
BGYM-1	10/26/2011	0.38	

MDL: Method Detection Limit

JI: The identification of the analyte is acceptable; the reported value is an estimate. The reported value is between the MDL (method detection limit) and the RL (Reporting Limit).

JQ1: The identification of the analyte is acceptable; the reported value is an estimate. Laboratory Control Sample (LCS)/Laboratory Fortified Blank (LFB) recovery is outside control limits.

JQ2: The identification of the analyte is acceptable; the reported value is an estimate. Continuing Calibration Verification is outside control limits.

Table 4-4. Boggy Branch Dissolved Iron Compared to the Eco-reference Value

Boggy Branch Dissolved Iron Data Summary	
	Dissolved Iron (mg/L)
BGYM-1 Median:	0.3445
BCLM-14 Median:	0.0640
Eco. Ref. 90th %tile:	0.6132

4.3 Total Iron

In 2007 and 2011, ADEM collected a total of 24 total recoverable iron samples from two different stations, BGYM-1 and BCLM-14. Since neither ADEM nor EPA have any water quality criteria for total iron, the iron samples were only compared to the eco-reference value. The median value of the total iron samples from station BCLM-14 was well below the eco-reference value, and the median value of the total iron samples from station BGYM-1 was relatively the same as the eco-reference value. While the median value at station BGYM-1 was slightly higher than the eco-reference value, it is still believed that there is no impairment, and the total iron levels are at background levels. A summary of the median total iron values at each station compared to the eco-reference value is shown below in Table 4-5.

Table 4-5. Boggy Branch Total Iron Compared to the Eco-reference Value

Boggy Branch Total Iron Data Summary	
	Total Iron (mg/L)
BGYM-1 Median:	1.6050
BCLM-14 Median:	0.3075
Eco. Ref. 90th %tile:	1.3520

5.0 Conclusions

From examination of all available data, ADEM has determined that a water quality impairment due to iron does not currently exist within Boggy Branch. Therefore, ADEM will not develop a TMDL due to “more recent data” which is just cause for delisting waterbodies according to Title 40 of the Code of Federal Regulations (CFS), Part 130.7(b)(6)(iv).

6.0 Public Participation

As part of the public participation process, this Delisting Decision (DD) will be placed on public notice and made available for review and comment. The public notice will be prepared and published in the major daily newspapers in Montgomery, Huntsville, Birmingham, and Mobile, as well as submitted to persons who have requested to be on ADEM’s postal and electronic mailing distributions. In addition, the public notice and subject DD will be made available on ADEM’s Website: www.adem.state.al.us. The public can also request paper or electronic copies of the DD by contacting Mr. Chris Johnson at 334-271-7827 or cljohnson@adem.state.al.us. The public will be given an opportunity to review the DD and submit comments to the Department in writing. At the end of the public review period, all written comments received during the public notice period will become part of the administrative record. ADEM will consider all comments received by the public prior to finalization of this DD and subsequent submission to EPA Region 4 for final review and approval.

7.0 Appendices

7.1 References

ADEM Administrative Code, 2013. Water Quality Program, Chapter 335-6-10, Water Quality Criteria, and Chapter 335-6-11 Use Classifications for Interstate and Intrastate Waters.

Alabama's §303(d) Monitoring Program. 2007 & 2011. ADEM.

Alabama Department of Environmental Management, 1998, 2000, 2002, 2004, 2006, 2008 & 2010 §303(d) Lists. ADEM.

ALAWADR Database (Water Quality Data). ADEM.

United States Environmental Protection Agency. 1991. *Guidance for Water Quality-Based Decisions: The TMDL Process*, Office of Water, EPA 440/4-91-001.

United States Environmental Protection Agency. 1986. *Quality Criteria for Water 1986*, Office of Water Regulations and Standards, EPA 440/5-86-001.

United States Environmental Protection Agency. 1999. *Decision Document Concerning EPA's Addition of Waters and Pollutants to Alabama's §303(d) List*.

7.2 ADEM Water Quality Data and Reference Documents

Table 7-1. ADEM Iron Data at Station BGYM-1

Station ID	Visit Date	Fe Dissolved (mg/L)	Fe Dissolved Detect Condition	Fe Total (mg/L)	Fe Total Detect Condition
BGYM-1	5/15/2001			1.8	
BGYM-1	6/13/2001			1.8	
BGYM-1	7/10/2001			1.51	
BGYM-1	9/10/2001			0.94	
BGYM-1	10/10/2001			0.948	
BGYM-1	12/3/2001			1.04	
BGYM-1	2/14/2002			0.538	
BGYM-1	3/26/2002			0.75	
BGYM-1	3/21/2007	0.32		0.99	
BGYM-1	4/24/2007	0.4		1.93	
BGYM-1	5/24/2007	0.43		3	
BGYM-1	6/12/2007	0.48		3.8	
BGYM-1	7/24/2007	0.349		2.13	
BGYM-1	8/7/2007	0.34		3.04	
BGYM-1	9/25/2007	0.36		1.7	
BGYM-1	10/25/2007	0.34		0.886	
BGYM-1	3/15/2011	0.29		0.932	
BGYM-1	4/7/2011	0.036	< MDL .036,	1.19	
BGYM-1	5/3/2011	0.475		0.036	< MDL .036,
BGYM-1	6/9/2011	0.156	J1	3.04	
BGYM-1	7/21/2011	0.318	JQ2	1.51	
BGYM-1	8/8/2011	0.181	JQ1	3.06	
BGYM-1	9/27/2011	0.351		1.25	
BGYM-1	10/26/2011	0.38		0.989	

MDL: Method Detection Limit

J1: The identification of the analyte is acceptable; the reported value is an estimate. The reported value is between the MDL (method detection limit) and the RL (Reporting Limit).

JQ1: The identification of the analyte is acceptable; the reported value is an estimate. Laboratory Control Sample (LCS)/Laboratory Fortified Blank (LFB) recovery is outside control limits.

JQ2: The identification of the analyte is acceptable; the reported value is an estimate. Continuing Calibration Verification is outside control limits.

Table 7-2. ADEM Iron Data at Station BCLM-14

Station ID	Visit Date	Fe Dissolved (mg/L)	Fe Dissolved Detect Condition	Fe Total (mg/L)	Fe Total Detect Condition
BCLM-14	3/23/2011	0.036	< MDL .036,	0.246	
BCLM-14	4/13/2011	0.036	< MDL .036,	0.314	
BCLM-14	5/12/2011	0.202		0.301	JQ1
BCLM-14	6/21/2011	0.036	< MDL .036,	0.374	JQ2
BCLM-14	7/19/2011	0.092	JQ2	0.314	
BCLM-14	8/16/2011			0.317	
BCLM-14	9/8/2011			0.245	
BCLM-14	10/26/2011	0.167	J1	0.236	

MDL: Method Detection Limit

J1: The identification of the analyte is acceptable; the reported value is an estimate. The reported value is between the MDL (method detection limit) and the RL (Reporting Limit).

JQ1: The identification of the analyte is acceptable; the reported value is an estimate. Laboratory Control Sample (LCS)/Laboratory Fortified Blank (LFB) recovery is outside control limits.

JQ2: The identification of the analyte is acceptable; the reported value is an estimate. Continuing Calibration Verification is outside control limits.

Table 7-3. Alabama's 2010 Ecoregional Reference Guidelines

Alabama's 2010 Ecoregional Reference Guidelines																				
			Level 4	Level 4	Level 3	Level 4	Level 4	Level 4	Level 4	Level 4	Level 4	Level 4	Level 4	Level 3	Level 4	Level 4	Level 3	Level 4	Level 3	Level 4
Parameters	Basis of comparison	Result to compare	45a	45d	45	65a/b	65f	65g	65i	65j	65q	67f	67h	67	68d	68e	68	71f	71	
Physical																				
Temperature (°C)	90th %ile	Median	24.656	25	25	27	24.6	27	25	24	27	24	26	25.7	25	23.48	24	22.12	22.586	
Turbidity (NTU)	90th %ile	INDIVIDUAL	21.7	6.823	15	49.56	9.7	13.05	26.21	10.73	42.3	6.622	10.787	8.824	9.667	9.025	10.1	3.693	11.1	
Total Dissolved Solids (mg/L)	90th %ile	Median	67.9	85.4	80	162.8	53.4	97.4	63.3	167.6	103.4	165	79.4	151.2	118	84.8	97.2	79.6	150.5	
Total Suspended Solids (mg/L)	90th %ile	Median	16	12	15	45	13.2	16.3	27.5	26.9	104.6	11.3	12.7	12.4	27	10	14	9.6	8.9	
Specific Conductance (µmhos)	Median	Median	40.1	37	39.05	129.7	20.4	53.4	25.8	70	72.5	207	34.35	86	49.5	37	39.15	96	109	
Hardness (mg/L)	Median	Median	10.65	11.1	11	56	14	14.2	6.52	82.1	34.6	94.05	8.56	42.3	16.2	10	12.15	47.2	56	
Alkalinity (mg/L)	90th %ile	Median	21.8	23.5	23.01	84.41	11.8	21.85	21.05	130.64	36.36	121.73	16.54	117.716	21	44.2	42.2	57.492	109.4	
Stream Flow (cfs)																				
Chemical																				
Dissolved Oxygen (mg/L)	10th %ile	Median	7.665	7.6	7.6	5.1	6.94	4.484	6.692	7.64	6.8	7.44	7	7	5.609	7.51	6.79	8.113	7.61	
pH (su)	10th %ile	Median	6.5	6.787	6.64	6.758	4.436	5.69	5.82	6.31	6.6	6.938	6.69	6.768	6.482	6.522	6.5	7.162	7.345	
pH (su)	90th %ile	Median	7.68	7.679	7.7	8.052	6.55	6.815	7.18	8.1	7.74	8.294	8	8.278	7.352	7.852	7.84	8.35	8.34	
Ammonia Nitrogen (mg/L)	90th %ile	Median	0.0078	0.0105	0.0105	0.04802	0.046	0.0203	0.0905	0.0932	0.074	0.0228	0.031	0.0346	0.119	0.0945	0.1007	0.023	0.023	
Nitrate+Nitrite Nitrogen (mg/L)	90th %ile	Median	0.1241	0.0718	0.0974	0.286	0.3258	0.2432	0.2764	0.3436	0.0634	0.261	0.0888	0.2403	1.202	0.456	0.6191	0.6895	1.42	
Total Kjeldahl Nitrogen (mg/L)	90th %ile	Median	0.40482	0.2598	0.28448	0.887	0.4176	0.583	0.6782	0.4858	0.6346	0.431	0.5107	0.5826	1.46	0.6595	0.733	0.624	0.466	
Total Nitrogen (mg/L)	90th %ile	Median	0.53114	0.3224	0.40016	1.1634	0.6396	0.773	0.8512	0.8064	0.69205	0.6836	0.69365	0.7109	2.269	0.9185	1.41685	1.295	1.57	
Dissolved Reactive Phosphorus (mg/L)	90th %ile	Median	0.0214	0.027	0.0243	0.0618	0.0264	0.0236	0.023	0.0167	0.0193	0.0174	0.0162	0.017	0.0109	0.019	0.0182	0.017	0.0155	
Total Phosphorus (mg/L)	90th %ile	Median	0.0663	0.0537	0.0599	0.201	0.04	0.0698	0.0682	0.0577	0.064	0.0514	0.0429	0.0566	0.0491	0.0501	0.05	0.1053	0.0497	
CBOD-5 (mg/L)	90th %ile	Median	2.57	2.37	2.4	3.2	1.96	2.65	2	2.53	2.3	1.78	2.58	2.3	1.86	1.9	1.9	1.1	1.1	
Chlorides (mg/L)	90th %ile	Median	4.778	4.029	4.495	12.032	6.692	6.066	4.2852	5.247	5.95	4.266	3.61	3.89	9.118	1.051	6.37	2.4112	2.622	
Total Metals																				
Aluminum (mg/L)	90th %ile	Median	0.2437	0.1558	0.1954	1.181	0.4886	0.2732	0.801	0.4045	1.561	0.2104	0.356	0.4114	0.155	0.265	0.3055	0.1954	0.127	
Iron (mg/L)	90th %ile	Median	1.094	0.5648	0.8722	2.362	1.352	3.976	3.548	0.839	2.13	0.893	0.733	0.9803	0.6855	1.047	1.046	0.4085	0.4294	
Manganese (mg/L)	90th %ile	Median	0.0554	0.0647	0.057	0.215	0.0436	0.7372	0.8094	0.081	0.113	0.067	0.052	0.0628	0.184	0.0563	0.1553	0.025	0.025	
Dissolved Metals																				
Aluminum (mg/L)	90th %ile	Median	0.05485	0.0545	0.0545	0.1365	0.2242	0.0545	0.1	0.11	0.193	0.1	0.1	0.1	0.1	0.1	0.1	0.03	0.03	
Antimony (µg/L)	90th %ile	Median	1	1	1	1	3.75	1	5	5	3.75	5	1	5		14	14	5	5	
Arsenic (µg/L)	90th %ile	Median	5	5	5	5	5	5	5	5	5	9.2	5	5		5	5	12.1	12	
Cadmium (mg/L)	90th %ile	Median	0.0435	0.0435	0.0435	0.0435	0.0394	0.0435	0.0435	0.0435	0.0435	0.0435	0.0435	0.0435		0.0448	0.04415	0.0075	0.0075	
Chromium (mg/L)	90th %ile	Median	0.0395	0.0395	0.0395	0.0395	0.0321	0.0395	0.0395	0.0395	0.0395	0.0395	0.0395	0.0395		0.0416	0.04055	0.025	0.025	
Copper (mg/L)	90th %ile	Median	0.043	0.043	0.043	0.043	0.0349	0.043	0.043	0.075	0.043	0.043	0.043	0.043	0.0298	0.043	0.043	0.1	0.1	
Iron (mg/L)	90th %ile	Median	0.292	0.2248	0.256	0.503	0.6132	0.8042	0.5392	0.2445	1.255	0.1218	0.1885	0.2428	0.1552	0.588	0.588	0.025	0.0579	
Lead (µg/L)	90th %ile	Median	1	1	1	1	2.5	1	5	5	2.5	5	1	5	1	5	5	5	5	
Manganese (mg/L)	90th %ile	Median	0.02665	0.0235	0.0253	0.1224	0.0328	0.7886	0.8218	0.025	0.1084	0.025	0.0235	0.025		0.05	0.05	0.025	0.025	
Mercury (µg/L)	90th %ile	Median	0.15	0.15	0.15	0.15	0.25	0.15	0.25	0.2	0.25	0.2	0.2	0.2	0.18	0.2	0.2	0.15	0.15	
Nickel (mg/L)	90th %ile	Median	0.114	0.114	0.114	0.114	0.0936	0.114	0.05	0.114	0.114	0.0884	0.114	0.114		0.114	0.114	0.025	0.025	
Selenium (µg/L)	90th %ile	Median	5	5	5	5	5	5	25	23	5	23	5	5		50	50	15	25	
Silver (mg/L)	90th %ile	Median	0.058	0.058	0.058	0.058	0.0467	0.058	0.05	0.058	0.058	0.0548	0.058	0.058		0.058	0.058	0.025	0.025	
Thallium (µg/L)	90th %ile	Median	0.5	0.5	0.5	0.5	4.5	0.5	5	5	4.5	5	0.5	5		18.5	18.5	5	5	
Zinc (mg/L)	90th %ile	Median	0.0345	0.0345	0.0345	0.0345	0.0294	0.0345	0.0345	0.0345	0.0345	0.0345	0.0345	0.0345	0.0267	0.0438	0.0345	0.03	0.0285	
Biological																				
Chlorophyll a (µg/L)	90th %ile	Median	5.019	2.14	2.67	5.181	1.755	1.282	4.732	3.31	3.949	2.562	2.086	2.322	1.392	2.458	2.67	3.044	4.255	
Fecal Coliform (col/100 mL)	90th %ile	Median	332	116	201.2	1564	400	234	620	582	1025	1416	152.2	197	829	252	320	200	435	

7.3 USGS Water Quality Data

Table 7-4. USGS Iron Data at USGS Station 02479960

Organization	Activity Date	Activity Time	Monitoring Location	Characteristic Name	Result Sample Fraction Text	Result Measured Value	Result Measured Unit Code	Result Status Identifier	Result Value Type Name
USGS-AL	1990-11-06	14:30:00 CST	USGS-02479960	Iron	Dissolved	90	ug/l	Accepted	Actual
USGS-AL	1991-02-12	10:30:00 CST	USGS-02479960	Iron	Dissolved	120	ug/l	Accepted	Actual
USGS-AL	1991-05-07	17:00:00 CDT	USGS-02479960	Iron	Dissolved	240	ug/l	Accepted	Actual
USGS-AL	1991-08-06	14:25:00 CDT	USGS-02479960	Iron	Dissolved	730	ug/l	Accepted	Actual
USGS-AL	1994-02-03	09:00:00 CST	USGS-02479960	Iron	Dissolved	78	ug/l	Accepted	Actual
USGS-AL	1994-05-18	08:30:00 CDT	USGS-02479960	Iron	Dissolved	1400	ug/l	Accepted	Actual
USGS-AL	1994-08-03	11:10:00 CDT	USGS-02479960	Iron	Dissolved	710	ug/l	Accepted	Actual
USGS-AL	1994-11-02	09:30:00 CST	USGS-02479960	Iron	Dissolved	530	ug/l	Accepted	Actual
USGS-AL	1995-03-01	13:50:00 CST	USGS-02479960	Iron	Dissolved	400	ug/l	Accepted	Actual
USGS-AL	1995-05-23	09:10:00 CDT	USGS-02479960	Iron	Dissolved	850	ug/l	Accepted	Actual
USGS-AL	1995-09-13	16:00:00 CDT	USGS-02479960	Iron	Dissolved	760	ug/l	Accepted	Actual
USGS-AL	1996-01-24	09:00:00 CST	USGS-02479960	Iron	Dissolved	290	ug/l	Accepted	Actual
USGS-AL	1996-03-12	13:30:00 CST	USGS-02479960	Iron	Dissolved	190	ug/l	Accepted	Actual
USGS-AL	1996-06-05	09:45:00 CDT	USGS-02479960	Iron	Dissolved	490	ug/l	Accepted	Actual
USGS-AL	1996-08-05	15:10:00 CDT	USGS-02479960	Iron	Dissolved	430	ug/l	Accepted	Actual
USGS-AL	1996-11-20	08:30:00 CST	USGS-02479960	Iron	Dissolved	300	ug/l	Accepted	Actual
USGS-AL	1997-02-25	09:00:00 CST	USGS-02479960	Iron	Dissolved	310	ug/l	Accepted	Actual
USGS-AL	1997-05-20	09:00:00 CDT	USGS-02479960	Iron	Dissolved	330	ug/l	Accepted	Actual
USGS-AL	1997-09-18	09:15:00 CDT	USGS-02479960	Iron	Dissolved	460	ug/l	Accepted	Actual
USGS-AL	1997-12-16	08:10:00 CST	USGS-02479960	Iron	Dissolved	230	ug/l	Accepted	Actual
USGS-AL	1998-03-17	09:00:00 CST	USGS-02479960	Iron	Dissolved	150	ug/l	Accepted	Actual
USGS-AL	1998-06-23	08:20:00 CDT	USGS-02479960	Iron	Dissolved	447	ug/l	Accepted	Actual
USGS-AL	1998-09-02	11:45:00 CDT	USGS-02479960	Iron	Dissolved	321	ug/l	Accepted	Actual
USGS-AL	1998-12-10	10:15:00 CST	USGS-02479960	Iron	Dissolved	602	ug/l	Accepted	Actual
USGS-AL	1999-02-23	08:45:00 CST	USGS-02479960	Iron	Dissolved	353	ug/l	Accepted	Actual
USGS-AL	1999-05-18	15:30:00 CDT	USGS-02479960	Iron	Dissolved	1100	ug/l	Accepted	Actual
USGS-AL	1999-08-23	16:15:00 CDT	USGS-02479960	Iron	Dissolved	417	ug/l	Accepted	Actual
USGS-AL	2000-08-10	09:00:00 CDT	USGS-02479960	Iron	Dissolved	432	ug/l	Accepted	Actual
USGS-AL	2000-10-18	08:50:00 CDT	USGS-02479960	Iron	Dissolved	245	ug/l	Accepted	Actual
USGS-AL	2001-02-28	15:35:00 CST	USGS-02479960	Iron	Dissolved	348	ug/l	Accepted	Actual
USGS-AL	2001-06-05	15:30:00 CDT	USGS-02479960	Iron	Dissolved	287	ug/l	Accepted	Actual

*Samples highlighted in yellow are samples which prompted listing on Alabama's 1998 §303(d) list.

7.4 USEPA Reference Documents

Figure 7-1. Reference Document from EPA's Decision Document Concerning EPA's Addition of Waters and Pollutants to Alabama's §303(d) List

STATE: AL
WATERBODY: BOGGY BRANCH
LOCATION: Near Wilmer, AL

REFERENCE DOCUMENTS: _____
Trend Station
02479960

SUMMARY OF INFORMATION USED IN USE SUPPORT DETERMINATION			
Water Use Classification	Fish & Wildlife (F&W)		
Pollutant of Concern	Iron (Fe)		
State Water Quality Standard	No numeric standards apply.		
EPA Water Quality Criterion	EPA's "Quality Criteria for Water, 1986" lists 300 µg/l for domestic water supplies (welfare) and 1000 µg/l for protection of freshwater aquatic life. The criteria are reaffirmed in the Federal Register, Vol. 63, No. 237, Dec. 10, 1998. Toxicity is based on the dissolved, biologically available fraction		
Other Measures Applied	Review for Dissolved Fe data: 3 values: 78, 710, 1400 µg/l		
Period of Record for Review	Feb. 3, 1994 - Aug. 3, 1994		
Data Represents Critical Season	<input type="checkbox"/> not applicable	<input type="checkbox"/> no, but necessary	XX yes, ____ to ____; ____ to ____; ____ to ____
Previous §305(b)/303(d) Listing			
WQ Standard - No. of Violations	1	3 - Total # Samples	

USE SUPPORT DETERMINATION - §305(b) GUIDANCE		
<input type="checkbox"/> Fully Supporting	XX <input type="checkbox"/> Partially Supporting	<input type="checkbox"/> Not Supporting

LISTING DETERMINATION	
Continue Inclusion on §303(d) List	XX
Removal from §303(d) List is Justified	

Other Materials/References Consulted: _____

Reviewer: David W. Hill Date of Review Completion: 12/18/98

7.5 *Boggy Branch Watershed Photos*

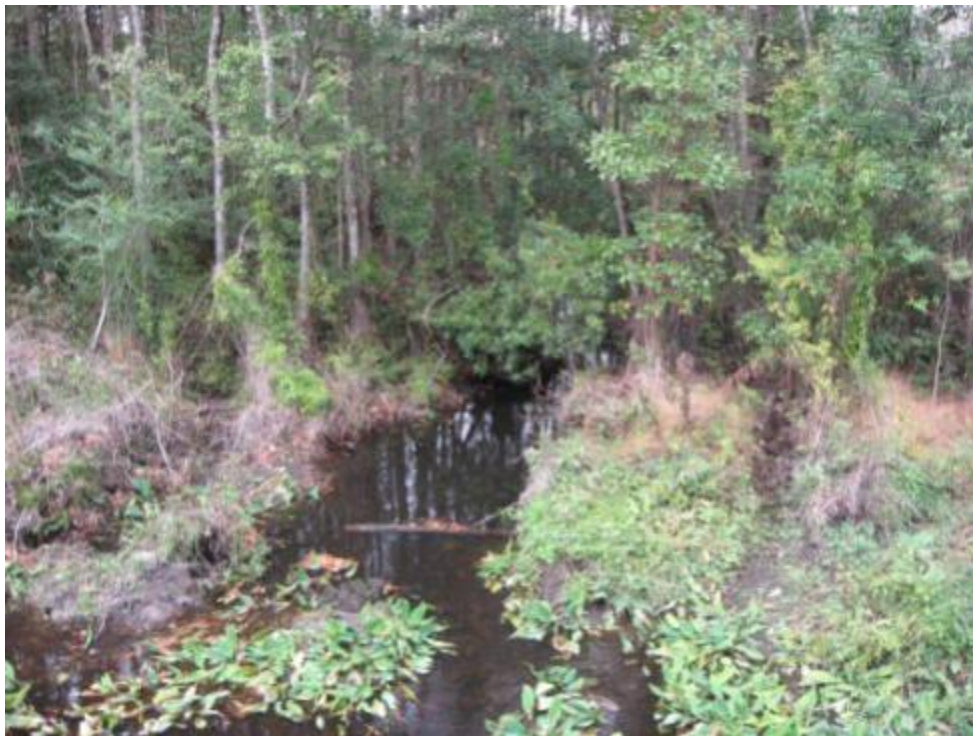


Photo 1 – BGYM-1 Looking Upstream (Photo Taken 11/2/2010)



Photo 2 – BGYM-1 Looking Downstream (Photos Taken 11/2/2010)



Photo 3 – BCLM-14 Looking Upstream (Photo Taken 4/13/2011)



Photo 4 – BCLM-14 Looking Downstream (Photo Taken 4/13/2011)